CMT6118
IDE Controller and Compact Flash Carrier with Floppy utilityModule

User's Manual

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Rev. A

ISO9001 and AS9100 Certified

CMT6118 ISOLATED
IDE Controller and Compact Flash Carrier with Floppy utilityModule
User's Manual

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Chapter 1 INTRODUCTION

This manual provides information on the CMT6118 IDE Controller and Compact Flash Carrier with Floppy utilityModule. This module allows you to stack a Compact Flash drive in your PC/104 system and provides connectors to attach a slave drive and a floppy drive to your stack.

CMT6118 utilityModule

The CMT6118 utilityModule was designed to provide support for using Compact Flash and a floppy device in a PC/104 stack. This module will support the RTD family of cpuModules and other standard PC/104 processor modules.

Features

The following are major features of the CMT6118 utilityModule.

- Floppy Controller
- IDE Controller
- Bus mode – cable free IDE operation through the PC/104 bus
- IDE mode – cabled IDE operation through the external IDE connector
- Selectable primary or secondary IDE interface in Bus Mode
- Selectable master or slave settings
- Power protection circuitry
- Activity status LED
- Positive retention for high vibration applications

Connectors

Connectors provided are:

- CN1: PC/104 Bus (XT)
- CN2: PC/104 Bus (AT)
- CN5: Floppy drive connector
- CN6: External IDE connector
- CN8: Compact Flash drive
- CN16: Reserved

Jumpers

- JP1: Configuration Jumpers
- JP2: External status activity LED

General Specifications

- Dimensions: 3.6 x 3.8 x 0.6" (90 x 96 x 15 mm)
- Weight Approximately 0.07 Kg (0.16 lbs.)
- Operating conditions: (not including drive)
- temperature: -40 - +85 degrees C
- relative humidity: 0 - 95%, non-condensing
- Storage temperature: -55 to +85 degrees C

Chapter 2 INSTALLING THE UTILITYMODULE

The CMT6118 is a PC/104 device with a stack-thru bus. Place the module on to a PC/104 stack by aligning the XT and AT connectors with the matching connector of another module. Exercise caution, do not miss align the connectors this can cause the module to fail indefinitely.

Recommended Procedure

We recommend you follow the procedure below to ensure that stacking of the modules does not damage connectors or electronics.

- Turn off power to the PC/104 system or stack.
- Select and install standoffs to properly position the utilityModule on the PC/104 stack.
- Touch a grounded metal part of the stack to discharge any buildup of static electricity.
- Remove the utilityModule from its anti-static bag.
- Check that keying pins in the PC/104 bus connector are properly positioned.
- Check the stacking order: make sure an XT bus card will not be placed between two AT bus cards, or it will interrupt the AT bus signals.
- Hold the utilityModule by its edges and orient it so the bus connector pins line up with the matching connector on the stack.
- Gently and evenly press the utilityModule onto the PC/104 stack.

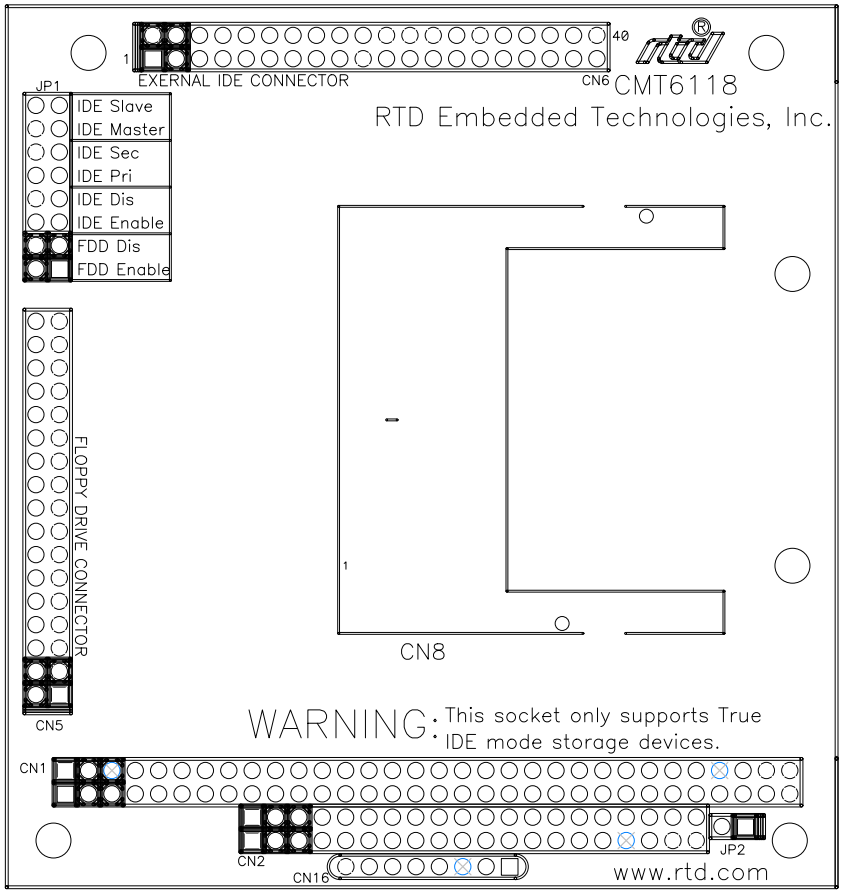
CAUTION: Do not force the module onto the stack! Wiggling the module or applying too much force may damage it. If the module does not readily press into place, remove it, check for bent pins or out-of-place keying pins, and try again.

Chapter 3 CONNECTING THE UTILITYMODULE

The following sections describe connectors of the utilityModule.

Locations

The figure below shows connector locations.



Connector Locations

Connectors		
Connector	**Function**	**Size**
CN1	PC/104 XT Bus	64 pin
CN2	PC/104 AT Bus	40 pin
CN5	Floppy	34 pins
CN6	IDE cable	40 pins
CN8	Compact Flash Drive	50 pin
CN16	Reserved	
JP1	Jumpers	16 pins

JP2	LED Connector	2 pins

Finding Pin 1 of Connectors

The pin 1 end of connectors is indicated by a white area silk-screened on the PC board. It is also indicated by a square solder pad visible on the bottom of the PC board.

Please make certain you have correctly identified pin 1 of a connector before you connect to it and attempt to use the utilityModule.

PC/104 Bus Connectors, CN1 and CN2

Connectors CN1 and CN2 provide PC/104 bus connections. CN1 carries XT bus signals, and CN2 carries additional signals for the AT bus. The signals on CN1 and CN2 conform to the IEEE P966 standard for the PC/104 bus. The pinout of the connector are shown below.

PC/104 XT Bus Connector, CN1		
Pin	**Row A**	**Row B**
1	IOCHCHK*	0V
2	SD7	RESETDRV
3	SD6	+5V
4	SD5	IRQ9
5	SD4	-5V
6	SD3	DRQ2
7	SD2	-12V
8	SD1	ENDXFR*
9	SD0	+12V
10	IOCHRDY	(KEYING PIN)
11	AEN	SMEMW*
12	SA19	SMEMR*
13	SA18	IOW*
14	SA17	IOR*
15	SA16	DACK3
16	SA15	DRQ3
17	SA14	DACK1*
18	SA13	DRQ1
19	SA12	REFRESH
20	SA11	SYSCLK
21	SA10	IRQ7
22	SA9	IRQ6
23	SA8	IRQ5
24	SA7	IRQ4
25	SA6	IRQ3
26	SA5	DACK2*
27	SA4	TC
28	SA3	BALE
29	SA2	+5V
30	SA1	OSC
31	SA0	0V
32	0V	0V

PC/104 AT Bus Connector, CN2		
Pin	**Row C**	**Row D**
0	0V	0V
1	SBHE*	MEMCS16*
2	LA23	IOCS16*
3	LA22	IRQ10
4	LA21	IRQ11
5	LA20	IRQ12
6	LA19	IRQ15
7	LA18	IRQ14
8	LA17	DACK0*
9	MEMR*	DRQ0
10	MEMW*	DACK5*
11	SD8	DRQ5
12	SD9	DACK6*
13	SD10	DRQ6
14	SD11	DACK7*
15	SD12	DRQ7
16	SD13	+5V
17	SD14	MASTER*
18	SD15	0V
19	(KEYING PIN)	0V

Note: Two locations on the bus have mechanical keying pins to help prevent misconnection of the PC/104 bus. These keying pins are a part of the PC/104 standard, and we strongly recommend you leave them in place.

If you have other modules without keying pins, we suggest you modify them to include keying.

Floppy Disk, CN5

CN5 is a 34-pin DIL connector which provides the standard signals to connect one or two floppy disk drives. The pinout of this connector is shown below.

Floppy Drive Connector, CN5

Pin	Signal	Function	In/out
2	RWC*	write precompensation	out
4	N/C	Not Connected	--
6	N/C	Not Connected	--
8	INDEX*	index pulse	in
10	MOTEN1*	motor 1 enable	out
12	DRVSEL1*	drive select 1	out
14	DRVSEL2*	drive select 1	out
16	MOTEN2*	motor 2 enable	out
18	DIRECTION*	step direction	out
20	STEP*	step pulse	out
22	WRDATA*	write data	out
24	WREN*	write enable	out
26	TRACK0*	track 0 signal	in
28	WRPROT*	write protect	in
30	RDDATA*	read data	in
32	HEADSEL*	head select	out
34	DSKCHG*	disk change	in
ODD PINS	GND	Ground signal	--

IDE Cable, CN6

CN3 is a 40-pin 100 mil DIL connector used to connect a cable to a second drive if the CMY107 is in BUS mode and to connect to an IDE controller in IDE mode. The pinout of this connector is shown below.

IDE Hard Drive Connector, CN3

Pin	Signal	Function	in/out
1	RESET*	Reset HD	out
2	GND	Ground signal	--
3	HD7	HD data 7	in/out
4	HD8	HD data 8	in/out
5	HD6	HD data 6	in/out
6	HD9	HD data 9	in/out
7	HD5	HD data 5	in/out
8	HD10	HD data 10	in/out
9	HD4	HD data 4	in/out
10	HD11	HD data 11	in/out
11	HD3	HD data 3	in/out
12	HD12	HD data 12	in/out
13	HD2	HD data 2	in/out
14	HD13	HD data 13	in/out
15	HD1	HD data 1	in/out
16	HD14	HD data 14	in/out
17	HD0	HD data 0	in/out
18	HD15	HD data 15	in/out
19	GND	Ground signal	--
20	N/C	Not Connected	--
21	N/C	Not Connected	--
22	GND	Ground signal	--
23	IOW*	I/O Write	out
24	GND	Ground signal	--
25	IOR*	I/O Read	out
26	GND	Ground signal	--
27	IOCHRDY	I/O Channel Ready	in
28	N/C	Not Connected	--
29	N/C	Not Connected	--
30	GND	Ground signal	--
31	IRQ	Interrupt Request	in
32	IOCS16*	16 bit transfer	in
33	A1	Address 1	out
34	PDIAG	Pass Diagnostic	in/out
35	A0	Address 0	out
36	A2	Address 2	out
37	HCS0*	HD Select 0	out
38	HCS1*	HD Select 1	out
39	LED	HDD activity LED (-)	in
40	GND	Ground signal	--

Compact Flash Drive, CN8

CN8 is a 50-pin 2mm DIL connector used for connecting the flash drive. The pinout of this connector is shown below.

IDE Hard Drive Connector, CN3			
Pin	**Signal**	**Function**	**in/out**
1	GND	Ground Signal	--
2	HD3	HD data 3	in/out
3	HD4	HD data 4	in/out
4	HD5	HD data 5	in/out
5	HD6	HD data 6	in/out
6	HD7	HD data 7	in/out
7	CS0	Chip Select 0	in
8	GND	Ground Signal	--
9	GND	Ground Signal	--
10	GND	Ground Signal	--
11	GND	Ground Signal	--
12	GND	Ground Signal	--
13	VCC	Power Signal	--
14	GND	Ground Signal	--
15	GND	Ground Signal	--
16	GND	Ground Signal	--
17	GND	Ground Signal	--
18	A2	Address 2	out
19	A1	Address 1	out
20	A0	Address 0	out
21	HD0	HD data 0	in/out
22	HD1	HD data 1	in/out
23	HD2	HD data 2	in/out
24	IOCS16*	16 bit transfer	in
25	N/C	Not Connected	--
26	N/C	Not Connected	--
27	HD11	HD data 11	in/out
28	HD12	HD data 12	in/out
29	HD13	HD data 13	in/out
30	HD14	HD data 14	in/out
31	HD15	HD data 15	in/out
32	CS1	Chip Select 1	in
33	VS1	Voltage Sense Signal	out
34	IOR*	I/O Read	out
35	IOW*	I/O Write	out
36	VCC	Power Signal	--
37	INTRQ	Interrupt Request	out
38	VCC	Power Signal	--
39	CSEL	Master/Slave	input

40	N/C	Not Connected	--
41	RESET*	Reset HD	out
42	IOCHRDY	I/O Channel Ready	in
43	N/C	Not Connected	--
44	VCC	Power Signal	--
45	LED	HDD activity LED (-)	in
46	PDIAG	Pass Diagnostic	in/out
47	HD8	HD data 8	in/out
48	HD9	HD data 9	in/out
49	HD10	HD data 10	in/out
50	GND	Ground Signal	--

Chapter 4 CONFIGURING THE UTILITYMODULE

The following sections contain information on configuring the utilityModule.

Jumpers JP1

CN1 configures the following functions:

- 1-2 -- Floppy enable
- 3-4 -- Floppy disable
- 5-6 -- IDE bus decode enable
- 7-8 -- IDE bus decode disable
- 9-10 -- IDE Primary
- 11-12 -- IDE Secondary
- 13-14 -- from on-board drive pins 47-48 (function determined by drive)
- 15-16 -- from on-board drive pins 49-50 (function determined by drive)

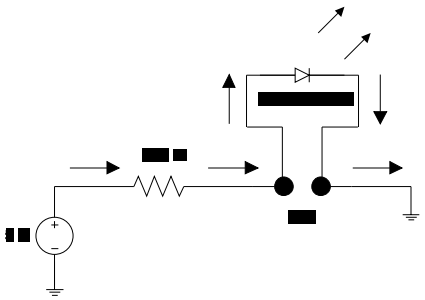
Default Settings

The utilityModule is delivered from the factory configured as the Primary IDE interface and with the floppy enabled.

- 1-2 -- Shorted
- 3-4 -- Open
- 5-6 -- Shorted
- 7-8 -- Open
- 9-10 -- Shorted
- 11-12 -- Open
- 13-14 -- Open
- 15-16 -- Open

Jumpers JP2

The LED connector allows the ease of placing the CMT6118HR in an enclosure with the ability to interface with status activity LED.



Chapter 5 RETURN POLICY AND WARRANTY

Return Policy

If you wish to return a product to the factory for service, please follow this procedure:

Read the Limited Warranty to familiarize yourself with our warranty policy.

Contact the factory for a Return Merchandise Authorization (RMA) number.

Please have the following available:

- Complete board name
- Board serial number
- A detailed description of the board's behavior

List the name of a contact person, familiar with technical details of the problem or situation, **along with their phone and fax numbers, address, and e-mail address** (if available).

List your shipping address!!

Indicate the shipping method you would like used to return the product to you.
We will not ship by next-day service without your pre-approval.

Carefully package the product, using proper anti-static packaging.

Write the RMA number in large (1") letters on the outside of the package.

Return the package to:

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USA

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